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ABSTRACT

Lesson plans, developed by teachers in an environmental education workshop, are compiled in this booklet. Curriculum areas covered by the plans include science, language arts, mathematics, social studies, art, recreation, and health. In general they specify: subject category, contributcr's name, title cf activity, grade level, major concept, purpose and objectives, materials required, procedures to follow, vocabulary words, related activities, resources, and evaluation. Lists of resource personnel and participants, the workshop schedule, and a reference list of books, pamphlets, and films supplement the lesson plans. (BI)

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MURRAY STATE UNIVERSITY - TEACHERS' WORKSHOP

IN

ENVIRONMENTAL EDUCATION

Audubon State Park, Henderson, Ky.
June 19-23, 1972

SE 016 142

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Lynn Hodges, Consultant for Environmental Education, Department of Education, State of Kentucky.

Bill Bell, Assistant Director, Conservation Education, Department of Fish and Wildlife Resources, State of Kentucky.

Bill Benson, Soil Conservation Service, U. S. Department of Agriculture.

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HENDERSON, KENTUCKY

ENVIRONMENTAL EDUCATION WORKSHOP

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8:30 AM - Registration 9:30 AM - Interest in Environmental Educ. Henderson City Sch. - Leona Smith 10:30 AM - Workshop Orientation - John Paulk Intro. to Materials	8:30 AM - (A) Ky. Park Naturalist (B) Science - John Paulk (C) Language Arts - Larry Contri	8:30 AM - (A) Creative Arts - Ann Winstead (B) Math (C) Audubon	8:30 AM - (A) Audubon (B) Creative Arts - Ann Winstead (C) Math	8:30 AM - Field Teaching - Ann Winstead - Larry Contri - John Paulk
12:00 - Lunch	12:00 - Lunch	12:00 - Lunch	12:00 - Lunch	12:00 - Lunch
1:30 PM - (A) Ky. Park Naturalist (B) Science - John Paulk (C) Language Arts - Larry Contri	1:30 PM - (A) Language Arts - Larry Contri (B) Ky. Park Naturalist (C) Science - John Paulk 4:00 PM - Ky. Dept. of Educ. - Lynn Hodges	1:30 PM - (A) Math (B) Audubon (C) Creative Arts - Ann Winstead 4:00 PM - Ky. Dept. of Fish & Wildlife Resources - Bill Bell	1:30 PM - (ABC) Planning - John Paulk 4:00 PM - Soil Conservation Service Rep. - Bill Benson	1:30 PM - Field Teaching 3:00 PM - Evaluation

LESSON PLANS

Basic Lesson Plan Form (Not all parts will be used in every lesson plan.)

Category: (example - Language Arts)

Contributor:

Title of Project

Grade Level:

Concept:

Purpose:

Behavioral Objectives - 1.
2.
3.

Materials:

Procedure:

Introducing the Concept -

Developing the Concept -

Ending the Concept -

Related Activities:

Resources:

Evaluation:

Category: Science

Contributor: Pat Wells

TREES

Grade Level: First Grade

Concept: Trees are not alike

Purpose: To help children to recognize the general differences between trees.

To help children to recognize a difference in shapes of the leaves.

To reinforce the meanings of "opposites".

To learn by comparison.

Materials: Lap boards, chalk, construction paper, tape, a piece of sandpaper, books - Have You Seen Trees? and Nature Wonderland.

Procedure: For motivation read the story, Have You Seen The Trees? Do not read the last question in this book, it will be used later on in lesson.

Now, let's go look at trees. What do you notice when you look at trees? (size, leaves, trunk, branches, twigs, etc.)

Let's look at just the leaves of the tree. At this time show children p. 30 of Nature Wonderland. Can the children find the "different" leaf in each row or were they all "alike"?

Next, all of us are going to collect nice soft leaves. (Try to stay away from dead brittle ones.) After the leaves are found, make a comparison between the leaves by looking at the colors - Are they all the same?

Using the book, Have You Seen Trees? read the last question and answers. Can we find our leaves in the book?

Next, give each child a board lap and a piece of chalk. Mount a leaf (using tape) to the middle of construction paper. Using the chalk, fill in all the area around it. (Be sure and illustrate first!). Now let's compare the shapes. (Be sure and remove leaf.) Put the materials aside.

Contributor: Pat Wells

TREES -(Cont'd.)

With a piece of sandpaper let the children feel "roughness" and using the other side feel "smoothness". Now feel the barks of various trees - Are they rough or smooth?

When finished with task ask these questions:

Are all trees alike?

How do you know?

Activities:

1. Listening to a story.
2. Finding differences.
3. Gathering leaves.
4. Recognizing colors.
5. Making chalk prints.

Category: Science

Contributor: Vicki Watson

I SEE

Grade Level: K-3

Purpose: A. To assist child to be aware of what he sees in his immediate environment.

Materials: B. 1) Ditto Sheet for each child such as:

(Examples)

Things I See	
Made By Nature	Made By Man
Flowers	Cars
Sun	House

2) Have each child title and make his own observation sheet.

Introduction: C. Today we are going to play a game to see how many things you can think of that you see in this area. On one side of your sheet draw things made by nature and on the other side things made by people (clarify the concepts of nature and man-made; give examples).

When you have finished count the number of things in each list and put the number above your list. All ready to go? I wonder how many different things we will have?

Variations: D. This may be changed to "I Hear", "I Feel", "I Taste".

Correlation: E. Science and health units on the five senses may find this activity valuable. A large picture of these objects may be produced as an art project. This could be part of a kindergarten or first grade economics work.

Category: Science
Contributor: Vicki Watson
Title: I See (Cont'd.)

Tree Riddles

1. What tree always sighs and languishes? (Pine)
2. What tree grows nearest the sea? (Beech)
3. What tree always has a partner? (Pear)
4. What tree is often found in bottles? (Cork)
5. What tree is older than most other trees? (Elder)
6. What tree is always found after a fire? (Ash)
7. What tree do ladies wear around their necks? (Fir)
8. What tree wages a war on crops? (Locust)
9. What is the neatest tree that grows? (Spruce)
10. What tree is often found in people's mouths? (Gum)
11. What tree is an awful grouch? (Crabtree)
12. What tree does everyone carry in his hand? (Palm)
13. What tree is particularly useful in snow and rain? (Rubber)
14. What tree grieves more than any other? (Weeping Willow)
15. What tree is worn in the Orient? (Sandalwood)
16. What tree describes a pretty girl? (Peach)
17. What tree is used in kissing? (Tulip)

Note - Taking

I. Objectives:
   A. To aid students in making accurate description.
   B. To help develop skills in note-taking.
   C. To give practice in using synonyms.

II. Activity:
   Near the center station, have each student pick out a bush, tree, plant, animal, etc. Describe in writing its location and appearance. (This can be repeated several times during the school year.)

III. Procedure:
   A. Go outdoors with a pencil and paper.
   B. Tell each student to select a plant to describe.
      1. First-describe the location of the plant. (So someone else can find it)
      2. Second-describe the plant.
      3. Sketch it.
   C. After returning to center station, rewrite notes and check other books and dictionaries to find more descriptive terms.
   D. Return to this area several times during the year. (Name the plant description for each season.)

Category: Science

Contributor: Elaine Benson

BIRDS

Grade Level: Primary

Purpose:

(a) Students become aware of the size, color, habits and sounds of birds.

(b) Students realize that some species are common in their environment, some are migratory and some are non-existent.

(c) Students discover that birds are different from all other animals because of their covering of feathers.

Behavioral Objective: Students should be able to identify and discuss with 80% accuracy some common birds of their environment.

Materials:

(a) Old Bird's Nest
(b) Feeding Station
(c) Pictures and Books of Birds
(d) Bird Feathers

Procedure:

(a) Discuss with students birds they can recognize in their area.
(b) Show pictures and books of other birds. Discuss the many species all over the world. Stress the fact that we may only see some species by going to a zoo or some other establishment.
(c) Discuss similarities and differences. Bring into this discussion that birds vary from two inches (hummingbird) to eight feet (ostrich). Also, some do not fly because their wings will not support them in flight.
(d) Discuss the value of birds to our environment and measures we can take to protect and preserve them.

Activities:

(a) Collect books and pictures of birds.
(b) Examine the feathers of different birds.
(c) Student may find an old bird's nest. Examine it closely and discuss the kind of material used in constructing it.
(d) Construct a feeding station outside the classroom and begin to observe birds year round. (Children should observe to see if the same birds feed here year round - this activity can be best used the first month of school).
(e) Take a walk and watch flying birds. How are they different? Also, observe beak and feet shapes. Discuss why they are different? Discuss the type of food which may be consumed because of body structure.
(f) Write a few sentences telling how the world would look to you if you were a bird.

Category: Science

Contributor: Lenee Dees

Grade Level: 5th. or 6th. grades

A HABITAT FOR OBSERVING INSECTS

Concept: Learning through observation is more meaningful to children, and they become more independent in forming questions and pursuing answers.

Materials Needed:

1. Plastic containers such as those that milk or bleach come in.
2. Fine screening wire or cheesecloth.
3. Plastic wrap
4. Masking tape
5. Knife

Objectives:

1. To make a habitat suitable for keeping insects for observation.
2. To learn common characteristics of insects.
3. To arrive at understanding of insects' role in the interrelated chain of life.
4. To become aware of special adaptations of insects that enable them to pursue their 'niche' in life.
5. To develop curiosity in children so they will form questions and search for answers.

Procedure:

I. Housing---For insects that are primarily "crawlers" use a plastic gallon milk container or bleach bottle. Cut one side of container out and securely cover it with plastic wrap. Cover top with fine screen or cheesecloth. Observations can be made through the plastic wrap on side of container. To make habitat larger, tape two containers together--cutout sides together--then cut openings on outsides and precede as above for observation windows.

Habitats for butterflies, moths and other flying insects should be a large, screened in "cage".

II. Collecting Insects---Have groups choose a particular area from which to collect insects. Choose a variety of areas so insects will be collected from different habitats, such as edge of a wood, small stream, vacant lot, a lawn, a rotten log. Also include some insects which are attracted to light.

III. Feeding---Include in your habitat a part of plant or earth on which the insect is found. This will usually be their source of food. Add a piece of cotton or cheesecloth moistened with a sugar solution to provide nourishment and water. Many insects which do not eat plants will eat powdered dog food, as long as water is available.

Category: Science
Contributor: Lenee Dees
Title: A Habitat for Observing Insects - Cont'd.

IV. Investigating---Encourage students to form their own questions by careful observation. This gives them the opportunity to search for answers through exciting investigations and independent study. The following are some questions that will probably arise:
1. Can insects see?
2. How do they move?
3. Do they smell food?
4. Do they lay eggs?
5. How long does it take the eggs to develop into larvae and then adult?
6. Can insects hear?
7. What do spiders do with captured insects? (Explain to class that while spiders are not insects, they may be included in the observation.)
8. Can insects swim?
9. Can you distinguish female from male?
10. How is each insect equipped to survive and fulfill its role?

V. Additional Activities:
1. Keep written account of changes in insects and any other observations made.
2. Visit Audubon Museum's collection of insects.
3. Make sketches of insects and development of egg to adult.
4. Read books, view filmstrips, make slides and transparancies.
5. Write a paragraph on Who Am I? describing an insect without naming it. See if classmates can guess its identity.

Background Information for Teachers of Understandings That Should Develop as Result of Study

I. Characteristics of Insects
A. Three distinctive body parts
1. head
2. thorax
3. abdomen

B. All insects have 6 legs and at least one set of wings

II. Insects can be beneficial or nonbeneficial.
A. Beneficial insects:
1. Pollinate flowers, fruits, vegetables.
2. Produce food---honey.
3. Serve as food for higher organisms.
4. Control agents for other insects.
5. Beneficial soil improvers.

B. Nonbeneficial insects:
1. Transmit disease.
2. Destructive to surroundings
3. Pests

Category: Science

Contributor: Robert R. Hoagland

Grade Level: Junior High

TREE IDENTIFICATION

Purpose: To create an interest and understanding in the functions of a tree and its importance to man, animal, and nature.

Objectives:
1. Know the difference between a softwood and a hardwood tree.
2. Name the products made from a tree.
3. Know the value of the tree to man, nature, and animals.
4.. To familiarize students with various units of measurements.

Material:
1. Manual and/or Textbook
2. Pencil, paper, and measuring tape.

Activity I: Name the various parts of a tree that can be seen by the eye.

Procedure:
1. Sketch the tree or hand out mimeographed sheets.
2. Name the parts of the tree and labels.
3. Explain what job each part of the tree does.

Activity II:

Classification of Trees

Procedure:
1. Collect 4 leaves from a hardwood tree and sketch.
2. Collect 4 leaves from a softwood tree and sketch.
3. Label each leaf and sketch as hardwood or softwood.
4. Tell what happens to the leaf during the winter.
5. Explain what food value grows on the tree.
6. Explain the appearance of the true in general.

Activity III:

Obtain information about a _____ tree by observation of the tree and reference material. (any tree)

Procedure:
1. Answer questions on mimeographed sheet.
2. Explain the different products made from this tree.
3. Explain the functions of each part of the tree. (A mimeographed sheet may be given to students or students may sketch the tree)
4. Observe the different creatures that are in or around the tree.
5. Find a tree stump and count the annual growth rings to determine how old the tree was at time of cutting.

Mimeographed Sheet - Activity III

I.
1. Sketch the leaf of the tree and name the tree.
2. How big is the leaf?
3. How tall is the tree?
4. How big is the diameter of the tree?

Category: Science
Contributor: Robert R. Hoagland
Title: Tree Identification -(Cont'd.)

Mimeographed Sheet - (Cont'd.)

5. What food does the tree produce?
6. Describe the bark of the tree.
7. Is the tree a hardwood or a softwood?
8. Is the trunk long, medium or short?
9. Does the tree stand straight?
10. Are there other trees close?
11. Find a stump and tell how old the tree was at the time of cutting.

II. Name 4 products that are made from this tree.

1._____

2._____

3._____

4._____

III. Name any creatures that you see using the tree as his habitat.

1._____

2._____

3._____

4._____

Category: Science

Contributor: Phyllis Nelson

Grade Level: Grade 3

CLOUDS

Concept: There are four major cloud formations and these clouds may influence weather conditions.

Behavioral Objectives:

1. Improve the student's power of observation.
2. Recognize the four major cloud formations.
3. Recognizing what a cloud really is made of.
4. Examining the clouds role in the water cycle.
5. Associating cloud formations with weather conditions.

Materials:

A. Blue Construction Paper
B. Cotton
C. Colored Chalk
D. Glue

Activity:

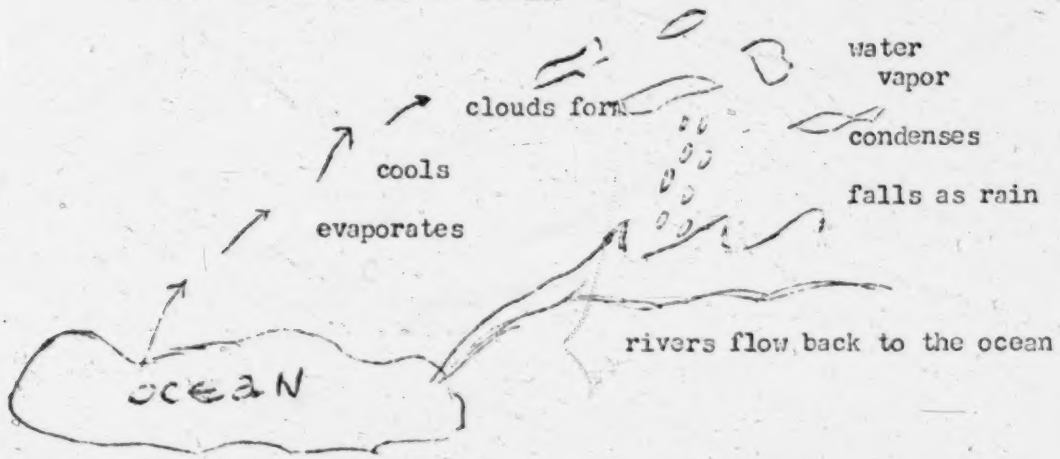
Procedure:

A. Explanation and definition of a cloud by asking questions such as, 'Who can describe a cloud? - Where would you expect to see a cloud? - How do you think it would feel and look if you were inside one? - Have you ever been inside a cloud? '

B. Instroduction of new vocabulary words relating to clouds.

1. Water vapor--invisible water particles in the air around us.
2. Condense--condition where water vapor in the air becomes very cool and forms water droplets.
3. Evaporate--condition where water becomes very warm and enters the air as water vapor.

C. Explanation of the clouds part in the water cycle--Beginning with the water in the ocean.



Category: Science
Contributor: Phyllis Nelson
Title: Clouds - (Cont'd.)

D. Explanation of different types of clouds.

1. Cumulus--thick, puffy, and usually having a flat bottom. The top is rounded or hill-shaped. This is a very high cloud. Usually indicates fair weather ahead.

2. Cirrus--silky, feathery, and curly. Another high cloud. Indicates mild weather.

3. Stratus--layered, foggy-looking, and thin. Stratus clouds hang low in the sky.
Usually indicates a change in the weather.

4. Nimbus--dark, gray, and formless usually thought of as a rain cloud.

Follow-Up:

1. Observe clouds a period during each day for a week:
   a. During each observation have the student form the clouds they see in an area in the sky. (using construction paper, glue, and cotton)

   b. Label these cloud formations, give the date, location, and weather conditions at that time.

   c. Keep a notebook of cloud formations during this week of observation.

2. Imagination--look for moving clouds. Do you see animal, plant, or people shapes in them? Using colored chalk and some imagination sketch the cloud objects you think you see. Try to imagine different colors other than white.

   (Suggestion) Think about the plants and animals you might see living in or near water.

Category: Science (Cont'd.)
Contributor: Phyllis Nelson
Title: Insects
Grade Level: Grade 3

INSECTS

Concept: There are many different animals classified as insects and they all have some things in common.

Behavioral Objectives:

1. Improve the students awareness of insects and respect for them.
2. Recognition of the physical characteristics of an insect.
3. Knowledge about different kinds of insects.
4. Recognition of their ecological importance.

Materials:

A. Screen Wire
B. Yarn
C. Oatmeal Boxes

Activity:

Procedure;

A. All insects have the same physical characteristics .
1. The body is made up of three parts: head, thorax and abdomen. (This can easily be shown by using an overlay transparency adding on one part at a time.)
2. Each insect has one pair of antennae.
3. Insects have six legs.
4. All insects have two pairs of wings.

B. Introduction to new vocabulary.
1. Antennae--sense organs or feelers that are located on the head of an insect.
2. Abdomen--the part of the insect's body where the stomach is contained.
3. Thorax--section of the insect's body that is located right behind its head.

C. Discussion of many kinds of familiar insects, including the appearance, food they eat, their habits, and their usefulness to man.

1. Grasshopper
2. Bees
3. Ants
4. Butterflies
5. Fireflies
6. Termites
7. Praying Mantis
8. Lady Bug
9. Walking Stick
10. Cricket

Follow-Up:

1. Make an insect zoo. (Use oatmeal box-just the top and bottom lid--and lace screen wire together to form a cylindrical home.

Example:

Category: Science
Contributor: Phyllis Nelson
Title: Insects - (Cont'd.)

a. Name the insect and label him according to the date he was found and the location.

b. Recognize and keep him supplied with his food.

2. After observing for a few days, have the students choose one of the following exercises:

a. Write a story about his life--pretending that he is his favorite insect.

b. Choose his favorite insect and draw him in his natural habitat.

Category: Science

Contributor: Alma Oberst

Grade Level: Grade 3

NATURE STUDY

Lesson Plan #1

Purpose: To help third grade students find and identify plants on a field trip to Audubon Park's Wildlife Lake.

To give them an awareness of secrets hidden in common plants.

To give them a sense of achievement by finding for themselves specimens listed.

Procedure: To give an opportunity to record their experience in a brief journal.

Preparation for field trip:
A. Discussion of arrangements.
B. Discussion of the list of plants.

Introducing the Concept: Sassafras can be found easily because it has a fork, a spoon and mittens.
Wild Grapevine hangs from trees in big twisted ropes.
Some plants are distinguished by their smell. Spice leaf has a spicy, pungent odor and it has a small pointed leaf. Blood root is easily identified by its shiny heart-shaped leaf.

Extending the Concept:
Take the class to Audubon Park and leave from in back of the Museum and walk to Wildlife Lake and back. Ask them to watch for sassafras, blood root, wild grapevines and spice bush.

As each of the four discoveries is made - talk about each of the four. The sassafras root has been used to thin the blood in the Spring and is still used as a herb tea. Sometimes the flavor is used in candies. Break off a piece of blood root at the base - use the juice to color a spot on the hand of one of the children. Explain how the Indians used bloodroot for coloring their skin. Crum the spice leaf and look at the twisted ropes of the grapevines.

Fixing the Concept: Have each student write an account of his experience.

Category: Science

Contributor: Gail Snowden

Grade Level: Grade 9

TREE IDENTIFICATION

Purpose: To develop a means of identifying trees; to develop the skill of using a key; to broaden vocabulary used in studying trees

Behavioral Objectives: After completing this exercise, the students should be able to:

(1) Identify fifteen different trees
(2) Name the observations that he would make if he wanted to identify a tree
(3) Describe the structure of a leaf
(4) Use a key for identification

Materials Needed:

(1) A key to trees with leaves (many are available)
(2) Leaves (this is intended for outdoor observation but leaves may be collected and brought to the classroom)

Activities: (1) Review structure of leaves, especially noting structures needed for identification
(2) Move to wooded area to study trees
(3) With use of the key, identify fifteen trees (include as many as possible that were not previously known)

Follow-up Activities for the Classroom:

(1) Show film on Photosynthesis
(2) Make a crossword puzzle using names of trees
(3) Discuss: (a) the tissues of a leaf; (b) the structure of the epidermis; (c) the structure of veins; (d) the leaf and photosynthesis; (e) respiration in green plants; (f) leaf coloration; (g) the falling of leaves; (h) leaf modifications

Evaluation: (1) Identify fifteen trees by using the key

Reference Materials:

(1) Any key available to trees with leaves
(2) Modern Biology -- Holt Rinehart Winston

Category: Science
Contributor: Gail Snowden
Title: Birds

Purpose: To teach the concept that birds are animals that have the same basic needs as other animals and that they show various adaptations to the environment in which they live.

Behavioral Objectives: At the conclusion of these activities, the students should be able to:

(1) Sit quietly making observations
(2) Learn to recognize ten birds
(3) Make a lengthy study of one species
(4) Be able to tell how birds feathers, bills, feet and legs are adapted to their way of life
(5) Be able to identify the external parts of a bird

Materials Needed: (1) Field guide to identify birds
(2) Note taking pad

Activities: (1) Observe birds (with binoculars)
(2) Observe one particular species for thirty minutes
(3) Describe activity of this bird
a. feeding
b. song
c. call
d. color display
e. external structures
(4) Describe environment
a. location
b. weather conditions
(5) If possible, locate and describe nest
(6) Describe habitat

Follow-up Activities for the Classroom:

(1) With field notes and the use of reference material, have the students write a life history of this bird.
(2) Show filmstrip - "Birds of North America"
(3) Discuss: (a) how birds are a part of the general ecological pattern, (b) the body structure of birds, (c) bird colors, (d) bills and feet, (e) how they are harmful or helpful, (f) enemies of birds, (g) hunting birds in season, (h) bird migrations, (i) internal body structure--how adapted to way of life

Evaluation: (1) Make and fill in an Identification chart for five birds
(2) Draw a sketch of a bird and label all external parts
(3) Give an oral or a written report on a bird

Reference Materials: (1) Field Guide to the Birds -- Roger Tory Peterson
(2) Modern Biology -- Holt Rinehart Winston

Category: Science
Contributor: Jack D. Jacobs
Grade Level: Middle School

POLLUTION

Concept: In a given community, environment determines the kinds and quantities of goods and services produced.

Purpose of Lesson: To help pupils to see that water pollution is sometimes responsible for the shortage of our water resources--as it supplies our needs for food, recreation, and life.

Introducing the Concept:

1. Is the water safe that you are drinking?
2. Why is it safe?
3. Is this the first time the water has been used?
4. What has happened to help make the water safer?

Have another glass of water from a spring or lake, or river, labeled DANGEROUS WATER.

1. What does this mean?
2. Why is it dangerous to use?

Developing the Concept:

Have the students bring some water from some pond or river and let them observe it in a glass. Then have them get some water from the cafeteria or biology room and observe the difference in the two. After their observation, let them discuss among themselves why one water is safer than the other and why one is dangerous.

Ask:

1. Is the water from the heavens clean?
2. If so, why isn't the river clean or other water resources.
3. What things make water unfit to drink?
4. What does "Polluted" water mean?

Extending the Concept:

Have the pupils collect water from different water spots in the county and put it in a jar. After all samples are collected, have them to shake them, then look at the different colors or pollution in them.

Ask: How can you and others help prevent this needless pollution?

Invite someone who is concerned with the city and county treatment in industry to describe their methods of cleaning water.

Fixing the Concept:

Show the students how water pollution affects your life and then have them to think of how it affects them.

Category: Language Arts

Contributor: Patricia J. Tweddell

AN OUTDOOR T.V. COMMERCIAL

Grade Level: Third Grade

Purposes:

1. To use creative ability in writing an appealing T.V. commercial describing an object of nature
2. To dramatize the commercial using his description of the object and therefore motivating the audience.

Materials: Paper, pencil, the great outdoors and enthusiasm.

Concept: T.V. Commercials can be written and dramatized using a thing of nature as the product being advertized.

Procedure:

1. Explain the lesson to the class by describing the purposes of T.V. commercials and presenting interesting effects of commercials.
2. Give the children some background on descriptive words by making them aware of color, texture, form, use, etc.
3. Give the children some ideas on oral expression and the technique used in commercials.

Activities:

1. The children either individually or in small groups will decide on an object of nature to make a commercial about.
2. The children will create a commercial using the descriptive words and making sure it will attract attention and be appealing to the audience.
3. The children will list at least ten descriptive adjectives about the natural object using the teacher's previous instruction as a guide.
4. The acting roles of the commercial will be assigned to or be selected by the children.
5. Rehearsal of the commercial by the children will take place.
6. Presentation of the commercial by the children to the audience will be the last activity.

This lesson will be divided into three days.

1st - Awareness of natural objects and using descriptive adjectives.
2nd - Actual writing of the commercial
3rd - Dramatization of the commercial

Category: Language Arts

Contributor: Patricia Wells

Beginning Sounds of Outdoor Words

Grade Level: First Grade

Concept: Words have beginning sounds.

Purpose: To reinforce the "Alpha People" characteristic clues.

To reinforce the correlation of sounds to letter recognition.

To create an awareness of names of objects in the outdoor environment.

Materials: pencils, paper squares, tape and chalkboard for the individual.

Procedure: Supply each child with a pencil and board. This may be taught in game form out-of-doors. All objects of nature and man-made, may be used. Let the children sit in a circle. Each child may identify an object then try to tell the letter name of the beginning sound. If he is correct, he may label the object with the correct letter. If not, a volunteer may guess and follow up. Play this game until all volunteered objects are used.

Next, the children may play the game "Riddle-ma, Riddle-ma, Ree; I see something you don't see and the beginning sound is_____." Be sure and use just the objects labeled.

For quick clean-up purposes, see who can "get the most labels."

Activity:
1. Naming Outdoor Objects
2. Giving the beginning sound of each word named.
3. Guessing game.
4. "Clean-up" game.

Category: Language Arts

Contributor: Elaine Benson

Awareness and Communication Through the Sense of Touch

Grade Level: Second Grade

Purpose:

(a) Students build vocabulary, develop oral expression and are motivated to write sentences through the sense of touch.

(b) Students discover, become aware and appreciate the sense of touch.

Behavioral Objective:

Using touch only each student must be able to identify and describe one object of nature.

Materials:

(a) Objects of nature gathered by the children.
(b) "Feel Box"

Procedure and Activities:

(a) Lead students into a discussion with the following questions:
   (1) What are the senses we have? (name them)
   (2) Today we are going to discuss the sense oftouch. What do we usually touch with? (hands)
   (3) What does touching tell us? (how it feels)
   (4) Why is it important for us to be able to touch?
   (5) Do you know any animals or humans who use this sense more than other senses? (Blind people and animals with feelers)

(b) Take students for a walk outside. They are to feel objects of nature and describe how they feel.
Example:
   (1) This rock feels hard and rough.
   (2) The bark on the tree feels cold, dry and rough.

(c) Play a game. Each student collects an object from nature. Student does not let other students see the object. He returns it to the "Feel Box". The teacher has the "Feel Box" in her possession at all times. Students are seated and individually go to "Feel Box" with hands behind, using touch only, the student picks an object from the box. He must then describe the object and the students seated guess what he is describing until someone guesses. Each student is asked to keep the object until the next direction is given.

(d) Student is to write a sentence about the object he picked from the "Feel Box". Sentences are read to class.

Category: Language Arts

Contributor: Robert Jenkins

INTERPRETATION OF SCENES

Grade Level: High School

Objectives: To make students aware of differences in perception.
To increase vocabulary with the use of vivid, descriptive terms.
To develop an awareness of our environment.
To deal with grammatical parts of speech.

Introduction: Students may view a like picture but perceive an entirely different image than their classmates. They may have completely, almost opposite, terms or descriptions to describe the same scene. What are the causes of these different individual responses to the same picture? Colorful, vivid word choices can greatly enhance vocabulary and make self-expression much more accurate.

Procedure: A. Show students two different outdoor scenes and have them view each picture for a few minutes. Instruct students to deal with each picture separately - the pictures are not related in any way. The first picture shows a large, black bear roaming a field bordering a large Vermont Conifer Forest. Ask students to supply the following information: 2 action verbs, 2 nouns, 5 colorful adjectives, and 2 meaningful adverbs. Some logical word choices are:

Verbs - roaming, stalking
Nouns - King, domain, forest, nature
Adjectives - savage, majestic, powerful, towering, awesome, restricted (presence of a fence)
Adverbs - gracefully, Lordly, brilliantly

Most students will probably perceive this picture in much the same way. There may be, however, much variation because some will notice the barely visible barbed-wire fence.

B. Show the second picture to the students and ask for the same information as given in picture 1. Picture 2 shows a hunter with a shotgun slipping up on some unseen prey. This picture may easily lead to quite different interpretations. Some of the following terms may be supplied by students:

Verbs - stalking, walking, anticipating, killing
Nouns - outsider, hunter, sportsman, killer
Adjectives - young, poised, brutal, threatening, eager, courageous, savage
Adverbs - relentlessly , tenaciously, quietly, slowly, anxiously, cautiously

Category: Language Arts

Contributor: Robert Jenkins

Title: Interpretation of Scenes (Cont'd.)

Have students to read their word choices and to make a descriptive sentence of what they see this scene as representing. Notice what a difference in meaning different descriptive word choices can make.

Examples: The young, poised hunter was cautiously walking toward his prey.

The brutal, threatening killer was relentlessly stalking his prey.

Same picture but entirely different meaning.

Category: Language Arts

Contributor: Sandra Smith

NEWSPAPER WRITING

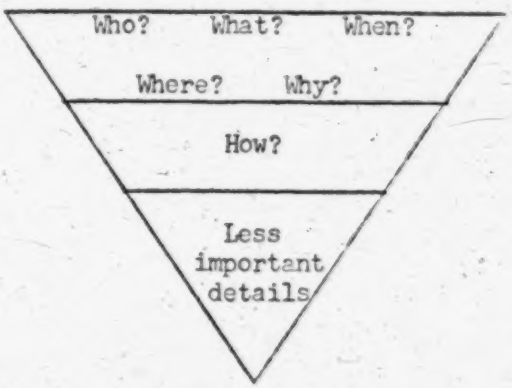
Grade Level: Junior High

Concept: The outdoor environment provides information for newspaper writing.

Objectives:
1. To reinforce the inverted pyramid for newspaper writing.
2. To observe the activity of a natural setting.
3. To improve communicative skills through writing and observing.

Materials: Paper, pencil, and the inverted pyramid form.

Procedure: Newspaper writing is a precise, factual account of a happening. The form we are using is the inverted pyramid.



Most articles will contain the top part of the pyramid, the 5 W's. The "How?" and other details are included for added interest. Student can find many activities in nature about which to write.

Example: June 22, 1972 - Henderson, Kentucky.
Yesterday Mr. and Mrs. David Dragonfly reported their son Davie to the Audubon Department of Missing Wildlife. Davie left home Wednesday morning in search of breakfast and did not return. Davie is of average size with blue-gray wings. His left wing is scared from an early accident. Davie was last seen flying close to Tom "Snapping" Turtle. Anyone with any information leading to Davie's whereabouts, contact either Mr. and Mrs. Dragonfly or the Department of Missing Wildlife.

Activities:
1. The student observes natural areas until he finds an activity about which to write.
2. The student will fill out an inverted pyramid form on the activity he is observing.
3. From the pyramid form the student will write a newspaper article.
4. The student will read his article to class members.

Category: Language Arts

Contributor: Sandra Smith

VOCABULARY GROWTH

Grade Level: Junior High

Concept: New words can be found in an outdoor setting.

Objectives:
1. To learn new words as a result of an outdoor observation.
2. To learn new words with Latin roots.
3. To improve communicative skills by correct usage of new words.

Materials: Paper, pencil, list of Latin roots, and dictionary.

Procedure: Students are already familiar with the etymology of words, particularly those of Latin. The outdoor setting will give them a closer contact with some Latin roots.

List of Latin roots and their meaning:
- Altus - high
- Anima - life, breath
- Aqua - water
- Cornis - of flesh
- Foluim - a leaf
- Humus - the ground
- Sciens - knowing
- Sectus - cut
- Terra - earth

Activities:
1. The class will discuss the pronunciation and meaning of the list of Latin roots.
2. The students will write words using the Latin roots, pertaining to their surroundings.
3. The students will check their words in the dictionary, if necessary.
4. The class will write sentences using the new words.

Category: Language Arts

Contributor: Susan McGinnis

Grade Level: Junior High

Exercise: One Act Plays

Behavioral Objectives:

Following this exercise the student will:

1. Demonstrate their powers of observation by writing a one act play or dialogue between the inhabitants of the trees.

2. Be aware that trees are complex things whose leaves, flowers, fruit, seeds, bark, and buds are worth studying.

3. Have increased their vocabulary and ability to write.

Procedure: The students will take a short field trip of two and a half blocks to Central Park where a wealth of trees abounds in a very small one block area. In this area the squirrels are numerous as are many birds. The challenge will be to see how different trees can be found and how many other animals or insects can be found in the trees.

Upon return to the classroom a discussion of what was observed will be held following which the class will be broken up into small groups to work on one act plays.

1. Write a play from the point of view of the occupants of the tree after a group of environmentalists have passed through.

2. From the occupant's point of view after the trees have been cruised for a sawmill.

3. After people have been through looking for a Christmas tree.

4. After a classroom tour of the woods.

5. After a group has gone through on a nutting expedition.

The plays should reveal how trees are one of the important resources of our country, and how their value extends beyond the immediate end product to benefits such as prevention of soil erosion and flooding; climate control; and protection of wildlife.

Category: Language Arts

Contributor: Susan McGinnis

TREES

Grade Level: Junior High

Exercise Language: Teaching Trees

Concept: Trees contribute to a large portion of one's health and well being as well as to the aesthetic appreciation of life. Trees are one of the best-known plants in man's experience.

Purpose: To create in each student an appreciation for the trees in our environment.
To teach the concept of figures of speech.
To teach written expression.
To widen the students horizons.

Procedure: Discuss the different types of trees the students know with the class. List on the blackboard.
--Ask the students to estimate how many trees are in the schoolyard. List varieties students can name.
--Ask what major groups trees fall into and how they are identified.
--Check the answers by going on a field trip to the schoolyard and counting the trees and varieties.
--Instruct the students to observe the trees closely in order to report on their characteristics upon return to the classroom.
--After sufficient time for observation of the trees return to the classroom and discuss the trees that make up the immediate environment of the school.
--Read the poem "Trees" to the students. Read the following quote from the July 5, 1971 Sports Illustrated, Vol. 35, page 9: "Announcer Chris Schenkel, describing a tough closing hole at the U.S. Open. 'Joyce Kilmer must have had this in mind when she wrote "Trees."
--Ask how many know what a metaphor is. Ask for a definition or an example.
--What is the metaphor found in "Trees"?
--What is the simile found in "Trees"? Define simile.
--Ask if the students can find other examples of figures of speech in the poem.
--Finally ask the students to describe the trees they have observed in the schoolyard in a short paragraph making use of one or more figures of speech in this description, but not using the trees name. After the descriptions are written read them orally and let the class name them from the description.

Category: Language Arts

Contributor: Gloria B. Bugg

Environmental Education Through Language Arts

Grade Level: Sixth Grade

Purpose: To relate to others a combination of imagination and the senses in an environmental situation.

Behavioral Objectives:

The students will---

1. Demonstrate through roleplaying their ability to project themselves as something other than a human being found in nature.

2. Use his five senses in the participation of Behavioral Objective # 1.

3. Utilize his familiarity of the plant or animal through descriptive answers.

Activity:
The students will be instructed to think of a non-human living creature, plant or object from their environmental surroundings which they would like to be. They will then be given an assignment sheet as follows:

1. My color is _____
2. If you touch me _____
3. If you hear me _____
4. If you smell me _____
5. You will find me _____
6. My part of Nature is _____
7. To live I need _____
8. A one word description of how I move is _____
9. My home is _____
10. To protect myself, nature gave me _____
11. I am a _____

Each student will have an opportunity to give each clue one at a time until someone guesses his identity.

Category: Language Arts

Contributor: Lonee Dees

Vocabulary Enrichment; A Lesson in Sensitivity

Grade Level: Fifth and Sixth Grades

Concept: Vocabulary can be enriched and creative writings inspired when a sensitivity to the world around us is developed.

Objectives:

1. To stimulate a greater sensitivity in describing the world around us.
2. To learn to make careful observations.
3. To develop use of comparative language in speaking and writing.
4. To strengthen vocabulary by use of synonyms for overused adjectives.

Materials Needed: Paper and pencil

Procedure: Lesson is developed for use over a period of four days or four lessons. Should be done in fall of year.

Lesson I Sensitivity to Others (Who Am I?)

How well do you know your students? How well do the students know their fellow classmates? How aware are they of the individual differences that make each person special?

Activity: Divide the class into small groups of 6-8. Ask each person to describe himself------physical characteristics as well as personality, likes, dislikes, desires, etc. Do not sign papers. The teacher collects papers from each group and reads descriptions. Group members see if they can guess who is being described.

Lesson II Sensitivity to Surroundings

How closely do students observe the scenery around them? How well can they describe what they see? Can they "paint a picture with words" so another person can visualize the image in his mind's eye?

Activity: (1) Ask students to look around them and write down all the colors they see. (2) Describe the colors using similies of other things the same color. Example: As red as fire, flames, blood, strawberries, apples, cherries. As orange as---sunset, goldfish, carrots, oranges, tangerines, apricots, persimmons, pumpkin. (3) Write words that can be used as synonyms for the colors listed in (1) above. Red--scarlet, crimson, vermilion, maroon, wine, fuchsia, ruby. Orange--tangerine, peach, copper, rust, etc. (4) Write the way these different colors make you feel. What mood do you associate with each color?

Category: Language Arts

Contributor: Lenee Dees

Vocabulary Enrichment; A Lesson in Sensitivity - (Cont'd.)

Lesson III Sensitivity to Surroundings - cont'd.

Activity: (1) Describe the movement of leaves in as many ways as you can. Example: gently falling, floating, whispering to each other, rustling, quivering, fluttering, swimming through air, whirling, dancing, swaying, chasing, twirling, swirling, gliding, spinning. (2) Using the abovedescriptive words, make a figurative phrase of several responses. Example:

a. gently falling like free-falling parachuters
b. whirling like satelites through space
c. floating like bubbles
d. dancing like ballerinas
e. spinning like tops
f. swirling like merry-go-rounds

(3) Choose an overworked adjective such as "pretty" and write synonyms. Example: beautiful, brilliant, glorious, exciting, enchanting, bewitching, flashing, striking, glamorous, glowing, rich

Lesson IV Sensitivity in Creative Writing

Activity: Using the responses in preceding exercises, "Paint a picture" of leaves with the descriptive words and figurative phrases. This can be done in the form of a poem such as Haiku or Cinquain.

Additional Activities:

1. Complete these sentences:
   a. Snow is as white as ---------
   b. It feels like ----------
   c. It sounds like ---------
   d. It's cold as ---------
   e. It's quiet as --------
   f. It's soft as ---------

   Another word such as "rain" can be substituted for "snow" and the sentences adjusted accordingly.

2. Seeing Without Eyes --- Put several nature objects in a mystery box. Blindfold 2 children---one to handle and describe the objects while the other one tries to guess its identity. Child doing the description may feel, smell, listen or taste objects.

3. Choose an object around you and write down its description without naming it. Exchange papers and draw picture of object described.

Category: Language Arts

Contributor: Linda Floyd

WRITTEN EXPRESSION

Grade Level: Grade 6

Objectives: To use the outdoors to stimulate creative expression

To make the students aware of the different niches of even the smallest animals.

Materials: Small area of grass or pond
Pencils for each child
Paper for each child
Jar(any size), ½ inch bottom layer of charcoal, ½ inch layer of pebbles, ½ inch layer of dirt in which you can add small plants and insects, saran wrap to place on end of jar

Procedure: Select a small area of grass and observe the insect life. Have the children imagine how it would feel to be an insect. Write short stories of events in the life of one of the insects observed in that area. The children might also be given hand lens to observe their particular area.

Direct pupils: "Observe an ant colony and then pretend that you are an ant in the colony. Describe the life in the colony." The children might also use such things as a spider in his web, termites in a dead tree, or a butterfly on a nearby limb.

Pupils could also use the same methods for observing an area along the edge of a pond or lake. They could be asked to compare the different type animals they saw and the difference in their life styles.

Follow Up: The children could make a terrarium using some of the same plot of ground that they observed or any suitable ground.

Category: Math

Contributor: Charline Staples

Grade Level: Junior High

GEOMETRY

Concept: Many Natural Objects have Geometric Shapes

Preparation: Students should be acquainted with these terms.

1. sphere - a set of points in space such that each point is equidistant from a given point called the center.
2. cone - a solid object that narrows evenly from a flat circle at one end to a point at the other.
3. square - a flat figure with four equal sides and four right angles.
4. triangle - a three-sided figure.
5. cylinder - a round figure with two flat ends that are parallel circles.
6. rectangle - any flat figure with four right angles and four sides.

Materials:
Pencil
Writing paper
Construction paper
Glue
Heavy cardboard

Activities:

1. Find and name geometric shapes in a given area.
2. Draw these shapes on paper as they are located.
3. While on a nature walk stop several times to look around and search for these shapes. List the objects found on your sheet under the appropriate drawing.
4. Using construction paper tear a shape for each of the objects which you have listed and arrange a design with these on your cardboard.

Category: Math - (Cont'd.)
Contributor: Charline Staples
Grade Level: Junior High

COMMUNATIVE LAW OF ADDITION

Concept: The order of the addends does not affect the sum.

Preparation: Students should
1. Be able to count accurately to 100.
2. Know the terms addends, sum, and order.
3. Be able to regroup for place value.

Procedure:
1. Find a tree stump and count the rings on it. Write this number on your paper.
2. After returning to the group, write the number of rings the other members found on their stumps.
3. Add up your addends. Add down your addends. Write the answer on your paper.
4. Change the order of your addends as many times as there are members of your group besides yourself. Add these each time.

Questions:
1. Did you get the same answer when you added up your addends as when you added down your addends?
2. Did you get the same answer for every time you changed the order of your addends?

Category: Math

Contributor: Catherine McGinnis

Grade Level: High School

The following two lesson plans were constructed to be used in high school math classes. They are intended to help make up a two week unit.

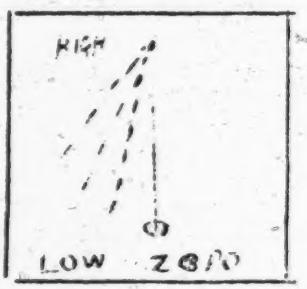
The construction of a weather vane similar to the one used in the second unit can be found in Everyday Weather and How It Works by Herman Schneider.

Acute Angle Measurement

Purpose: To help students develop skill in angle measurement by using varying wind velocities.

Behavioral objective: All students will be able to accurately measure an acute angle to within two degrees.

Materials: Velocity boards, protractor, ruler, pencil, and paper.



Procedure:

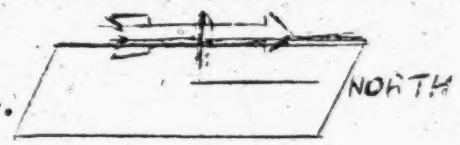
1. Set up velocity boards outside on flat ground.
2. Let wind blow the light weighted string and have the students mark the angle.
3. Have them measure the angle and record them.
4. Move the boards to the top of a hill.
5. Repeat readings and record.
6. Move to the bottom of the hill.
7. Repeat readings and record.
8. Move to other places and repeat procedure.
9. Discuss the differences in the angles if there are any and why they might be different.

Category: Math
Grade Level: High School
Contributor: Catherine McGinnis
Angle Measurement - (Cont'd.)

Purpose: To help students understand degrees and angle measurement by the use of wind direction.

Behavioral Objective: All students will be able to accurately measure the given angles to within two degrees.

Materials: Weather Vane on platform
protractor, ruler, pencil and paper.



Procedure:

1. Set weather vane up in a level position.
2. Align northern line mark on each weather base with the magnetic North pole.
3. Discuss why this is necessary in order to get an accurate wind direction movement.
4. Let the vane go in the wind and have the students mark the angle.
5. Discuss the direction from which the wind is blowing. The arrow head will indicate this.
6. Measure this angle.
7. Discuss the direction to which the wind is blowing.
8. Measure this angle.
9. Point out the 180 degree difference between the two measures.
10. Discuss whether it is necessary to measure both angles.

Category: Math

Contributor: Charles E. Loeffler

Grade Level: High School

TEACHING GENERAL MATH IN THE FIELD

When teaching general math to eighth grade students, several years ago, I found much interest when the out-of-doors technique was applied. At this time, the term "Environmental Education" was more of a notion than a reality. I can not forget the enthusiasm shown by the students in attempting to solve some of the practical applications. The techniques emphasized were finding the amount (board feet) of lumber in a particular tree, also, studying and understanding the amount of square feet in a given area. This helped the student understand special relationships. We, also, learned how to calculate the amount of cement (cubic feet) necessary to complete a particular job. Probably, the greatest interest was shown when the indirect method was used to measure some tall object by measuring shadows and applying proportions and ratios.

Concept: On many occasions, it is desirable to know the height of some tall object which cannot be reached for direct measurement. The method used must, then, be one of indirect measurement.

Procedure: Take group out of doors any day when sun is sufficiently brilliant to cast shadow. Materials needed are pencil, paper and device for making measurements. Select some tall object and have student estimate height. Record the estimates for future reference. Then, select some object casting a shadow (preferably 6' or smaller). Make an accurate measurement of the object selected and also, measure the length of the shadow. You are, now, ready to establish a ratio between object measured and length of shadow. Now, measure the shadow of the tall object selected. X can represent the unknown factor (height of tall object). By cross multiplying established ratios one can accurately determine the height of the tall object. Example as shown below:

Post measurement = 6 ft.

Post shadow = 3 ft.

Telephone pole = X

Tele. pole shadow = 20 ft.

6:3 = X:20

3X = 120

X = 40 ft. Height of telephone pole

Category: Math

Contributor: Robert Hoagland

Grade Level: Junior High

MEASURING TREES

Purpose:

To have a basic understanding of a few ways to measure a tree and calculate its board feet.

Objectives:

1. Determine the diameter of a tree (Biltmore Stick).
2. Calculate the number of 16' logs in a tree.
3. Calculate the number of board feet in a tree.

Material:

1. Biltmore Stick
2. String (66 feet long)
3. Paper & pencil
4. Tape measure

Activity 1:

Determine diameter, height, and board feet using a Biltmore Stick.

Procedure:

1. Calculate your pace - mark off 100' and count your steps both ways and divide the total steps into 200'. This will give you your pace in feet.
2. Select a tree or trees to measure.
3. Use Biltmore Stick to find the diameter.
4. Measure 66' by your pace.
5. Use Biltmore Stick to find the height of tree or number of 16' logs.
6. Calculate the board feet in that tree.
7. Select another tree and repeat steps 2 - 6.

Activity 2:

Determine the height of a tree using a rule and shadows.

Procedure:

1. Determine how tall you are.
2. Determine how long your shadow is.
3. Determine how long the tree shadow is.
4. Use the following mathematics.

$$\frac{\text{Your height}}{\text{Your shadow height}} = \frac{X \text{ (tree height)}}{\text{Length of tree shadow}}$$

Category: Math

Contributor: Gloria Smith

Grade Level: Junior High

MATHEMATICS SCAVENGER HUNT

Objective - The student must be able to demonstrate his ability to use measurement by finding and using examples in nature.

Materials - Tape measure for each pair of students, paper, pencils.

Procedure - Give each set of partners a list of duties to perform. The list will vary with the sophistication of the students. The following is a sample list:

Find the following:

1. Leaf - 6 inches long or 6 inches wide
2. Stick - 3 inches in circumference
3. 101_2 leaves. (Hint: What is 101_2 in our base 10 system?)
4. 8 pieces of litter. (This is your good deed for the day)
5. One worm. Measure it. How many would make one foot?
6. Measure any tree's circumference and calculate it's diameter.
7. Find the area in square inches of a picnic table top.
8. Multiply the length of your footprint by the length of your partner's footprint.

Follow Up - Go over problems to iron out any troubles. Ask students for their ideas in using math in the outdoors.

Category: Math (Cont'd.)
Contributor: Gloria Smith
Grade Level: Junior High

CLOCKS

Objective - By making several ancient clocks the student will be able to calculate the passage of time using natural environment.

Materials - Tin cans, ice pick, sand, 3' sticks, 3' strings, clock compass

Procedure - Three types of clocks are to be made. Each student can make all three or the class can be divided into three groups.

1. Sundial. The sundial is the oldest form of time-keeping. Place stick in ground in upright position. Make circle around stick with string. Add numbers to the face. Twelve should be at the point of the circle north of the stick. (Use compass here.)

2. Water clock. The water clock replaced the sundial because the sundial's use was limited to sunny days. A hole is punched near the base of the tin can with the ice pick, and the water flows out at a continuous rate. The water clock keeps time because it takes the same amount of time to empty the can every time it is filled. Experimentation in placing the hole will "set" the can for a desired time limit. The courts in ancient Athens used water clocks to keep one person from talking too long.

3. Hour glass. One trouble with the water clock was that it might freeze in cold weather. A French monk in the eighth century solved this by using sand instead of water. These were later improved by having the sand flow from one glass container to another by two funnels attached at the narrow end. (This can be adapted to this lesson if desired.)

Follow Up - (1) A study of base 12 may be desired using the idea of the sundial.

(2) A study of rate.
How long does it take for one can to empty?
How many times would the can have to be filled in a 24 hour period?
Did the sand or the water flow faster?

Category: Social Studies

Contributor: Gloria B. Bugg

Grade Level: Sixth

Purpose: To make the students aware through observation and discussion that one can survive with only natural surroundings.

Behavioral Objectives:
The students will---
1. Verbally communicate with each other and the teacher concerning man's basic needs and governmental structure of a new civilization.
2. Demonstrate, through roleplaying, their ability to organize themselves in a simulated situation.
3. Demonstrate some knowledge of survival in natural surroundings verbally.

Activity---
Group interaction and roleplaying-students will be given a simulated situation where the group members are sole survivors on a deserted island. Surroundings are similar to Audubon Park. Students will consist of two groups. Each group will then organize and roleplay the simulated situation.

The groups will then investigate the surrounding area for possible solutions to their survival, e.g. water- -is the water contaminated? If so, what can be done about contamination?

Suggested ideas:

1. Water-is it contaminated? If so what can be done about it?
2. Food-where can it be obtained? e.g. berries, animals, fish, edible roots and plants.
3. Shelter and warmth
4. Clothing
5. Organization of a new civilization-who does what? Does someone lead the group?
6. Protection and weapons for possible animal attacks
7. Health problems and remedies
8. Historian-record of civilization
9. Functional tools
10. Possible communication with outside world

Category: Social Studies

Contributor: Robert Jenkins

Grade Level: High School

CAREERS IN WILDLIFE CONSERVATION

General Objective:

To introduce the student to jobs open in wildlife conservation.

Specific Objective:

To make students aware that wildlife conservation is a facet of the broad field of ecology.
To stimulate interest in wildlife conservation jobs.
To partially list the requirements needed to apply for a particular job in wildlife conservation.
To partially list some of these careers.

Procedure:

This lesson plan would probably have to be a teacher/outside resource person lecture program. Hopefully enough student interest will be aroused to encourage student interaction.

Introduction:

Ecology is the intradependent relationship between all living and non-living things and their environment. Wildlife conservation is the act of protecting and preserving our wildlife for (1) balance of nature (2) aesthetic reasons (3) recreational purposes.

Different positions are open in wildlife conservation:

A. Wildlife Biologist
   1. Requires most technical training.
   2. Scientists seeking facts and leaving application of their findings to others.

B. Wildlife Manager
   1. Applies Research of biologist (puts knowledge to work).
   2. Applies special field techniques to the land and its wildlife.

C. Conservation Officer
   1. Enforces laws and regulations.
   2. Education of the public.

D. Wildlife Information-Education Specialist
   1. Produces informative materials in layman's terms.
   2. Education section works directly and personally with people.
      a. Editors of conservation publications
      b. Field agents
      c. Photographes, lecturers, etc.

E. The Conservation Aides (least professional but most practical field experience)
   1. Assistants to wildlife managers
   2. Fisheries crews
   3. Refuge managers

Category: Social Studies

Contributor: Grace Odle

Level: Junior High

Title: THE IMPORTANCE OF FOREST TO PIONEERS AND MODERN MAN

Purpose: To understand the importance of forests to man.

To develop an appreciation of living things.

To translate conservation principals into practice.

Objectives:
1. Discuss how the forests were misused by the early pioneers. After the pioneers cleared the forests for cattle, gardens, pastures, horses, and built their houses, they banded the trees and they were left to die.
2. The definition of banding is using an axe to cut a ring around the trunk of the tree so it will die.
3. To learn the practice of Selective Cutting. This means cutting only those trees that have been selected for their size, or removing weak trees that have been damaged by fire, disease or insects. We generally should remove only the larger, older trees for lumber.
4. The student should understand that the younger trees need room and sunshine to grow.
5. A good lumber tree should be at least 16 feet high before the first branches appear. Sixteen feet is also the length of logs cut for lumber.
6. The students should use the sense of sight to see if the tree is a shelter for a wildlife.
7. The student should realize the important reasons for conserving our forests: (1) The forests store water, as the snow melts very slowly in the winter; therefore giving it a better chance to soak into the ground. (2) Forests help make soil by losing their twigs and leaves yearly. (3) Forests help to prevent erosion. Their foliage help to break the fall of wind and rain. (4) Forests offer homes to native birds and other wildlife.
8. Forest provide many valuable products for modern man; such as fuel, furniture, pencils, paper, baseball bats, etc.

Materials Needed: Pencil, paper, small shovel.

Activity - Selective Cutting

I. Visit a park or forest. Pick out a small section of trees. Let each student choose a tree and give reasons why or why not the tree should be cut. List these reasons on a sheet of paper and share with the class.

Observation:

1. Is the tree at least 16 ft. high before the first branches appear?
2. Do you see smaller trees nearby that need more sunshine in

Category: Social Studies
Contributor: Grace Odle
Title: The Importance of Forest to Pioneers and Modern Man -(Cont'd.)

order to grow well.

3. Does the tree appear to be damaged by fire, disease or insects.
4. Do you see a home for squirrels or birds. Look for other animal signs.
5. Is the tree a dead one that houses a woodpecker?
6. How do you feel about the selective cutting of this tree?

Activity - Humus Soil

II. Let students dig a sample of soil under a tree, then dig another sample in an open area.

Observation and Touch

	Tree Soil	Open Area
1. What color is the soil?		
2. How does the soil feel?		
3. Is the soil covered with leaves?		
4. What lies under the leaves?		
5. Which soil feels moist?		
6. Which soil shows decay?		

Let each student discuss his findings to the group.

Follow up: Activity

1. Invite a state Forester to speak to the class, and maybe show a film.
2. Let students grow a plant in each type soil. Students could make growth comparisons.
3. Use the library to find the many products made from trees.

SMOKEY THE BEAR SPEAKS HIS MIND

Purpose:

1. To show the importance of maintaining wildlife habitats.
2. To show importance of conserving growth and maintenance of forests.
3. To make students aware of conservation laws and good citizens will abide by these laws.

Objectives:

1. To get the students to think about forest conservation and wildlife habits.
2. To get students to act on their own toward observing laws on conservation.

Materials needed: Smokey the Bear costume, Axe, Cigarettes, Matches, Large Saw.

Activity: Go to nearest forest and take the children on a guided tour. Point out to them the wildlife habitats that you see, and other things in nature. When you return ask for two volunteers to act

Category: Social Studies
Contributor: Grace Odle
Smokey the Bear Speaks His Mind - (Cont'd.)

out a scene about a man in the wood chopping down a tree, throwing matches and live cigarettes on the ground. Let the other volunteer act as Smokey the Bear. Let Smokey the Bear ask the man why he doesn't abide by the conservation laws. Let students ad-lib the whole scene.

Follow Up Activity:

Invite a conservation officer to speak to the class about wildlife. He could also show a film on conservation.

Category: Social Studies

Contributor: Steve Tweddell

Grade Level: Junior High

Objectives: To acquaint students with the problems that might arise between nations because of geographical reasons.

Materials: Pencil and pad. An area is needed where land can be divided among several or all members of the class. An ideal area would have trees, a source of water, and an open space.

Procedure: Divide the area into several sections. Make sure each section has some outstanding characteristic. Example: Place one group of students in an area where a water supply is. Another can be placed where the shade trees are. Still another group might be placed in the open space where no protection is provided.

There is a need to stress the area each student or group occupies is their sovereign territory.

Activities: A certain amount of time should be alotted for the student to occupy his territory. As time passes certain problems should become aware to each group. They should record these problems. When the alloted time passes the students should discuss each problem and how these problems might apply to the nations of the earth.

Category: Complimentary Activities

Contributor: Ruth Hazelwood

ENJOYING NATURE

Grade Level: High School

Objectives: To help students enjoy the aesthetic value of their environment

To teach students to use the out-of-doors as an aid to mental and physical health

To help students become aware of the beauty of nature that they often overlook

Purpose: To promote an awareness of the therapeutic value of a quiet time outdoors to a busy person

Activities: Hike a nuture trail as each student tries to fill his litter bag.

Be expecially aware! Call to attention unusual and special things seen and heard.

Find a quite spot to relax and play the following games:

(a) List all the sounds of nature you hear. (rustling leaves, running water, the buzz of a yellow jacket, humming mosquitoe, the "Bob White" of a quail) Be specific!

Pass about 10 objects collected by the teacher along the trail. (Shells, nuts, rocks, leaves, bark, moss, flowers, gumballs). Have each student, with his eyes closed or blindfolded, feel and identify each object. Keep score giving 1 point for a general identification and 2 points for specific identification.

Scavanger hunt for a list of either litter or natural items known to be in the area. Send 2 or 3 together to work on the items on one list. Give a time limit or a special call to end the hunt

While the students are busy with the scavanger hunt, collect a few leaves, berries, roots, etc. with strong and recognizable odors. Blindfold again and see how many each can identify.

Materials: Paper, pencil, scavanger lists, litter bags, blindfolds

Follow-Up Activities:

Make the environment at home or work more pleasant by bringing in plants, perhaps an aquarium or terrarium

Share your outings and nature knowledge with friends

Organize groups to walk, collect litter and investigate sources of pollution. Pressure from citizens often brings clean-up.

Category: Typing Classes

Contributor: Ruth Hazelwood

WASTE OF PAPER PRODUCTS

Grade Level: High School

Concept: Our use and waste of paper products for exceeds the resources to meet these needs

Purpose: To help students realize the necessity for wise use of paper products and their responsibility for replenishing the forests

Activities: Field trip to measure trees. (Pulpwood for our typing paper made from logs from 4' to 8' long and 4" to 14" across)

Find pictures, leaves of Spruce, Fir and Hemlock since these are main trees used for typing paper. Do these trees grow in our area?

Study tree rings to determine length of time to grow a "paper" tree. (Get a slice from a mill or take them there to see the saw mill at work).

Study the procedures of making paper.

After thorough study and discussion, compose at the typewriter a short essay on "What Trees Do for Us", "Life in a World without Trees" or a related topic.

Make posters and bulletin board shaming waste of paper and paper products. (We use approximately 300# per person per year.)

Follow-Up Activities:

Watch waste baskets daily to determine how much less paper we are using since we are waste conscious.

Plant seedlings in early Spring (distributed locally by Soil Conservation Service)

At the end of the school year figure cost saved on paper over last year's cost

Category: Art

Contributor: Patricia J. Tweddell

CREATING A NATURAL MOBILE

Grade Level: Primary

This lesson plan is designed primarily for Grades 1, 2 and 3, although it can be utilized effectively for all age groups.

Purpose: To develop a child's understanding and abilities in creating a mobile using nature as his materials.

Materials: Thread or string, all outdoor and natural materials.

Concept: Mobiles can be created in the outdoors using natural materials.

Procedure: 1. - Explain the meaning of mobiles and give examples of a variety of mobiles. A mobile is a form of artwork consisting of movable parts that are suspended from or balanced on rods, wires etc. and are capable of being set in motion by air currents or mechanical means. (Teacher could show the class a mobile) The mobiles may be of a variety of natural objects or of just one object. Examples are - a mobile of natural objects using different textures, colors or forms or only one texture, color or form may be used. A mobile showing one specific color of nature or many different colors of nature may be used. A mobile on just leaves alone or wildflowers alone can be used. Mobiles may be made using natural materials characteristic of the different seasons. (A mobile on colored leaves in the fall may be used.)

2. Give directions as to what materials are to be used, how to use them and where to find them.

3. The actual art work will be done by the students either individually or in small groups and then shown to the class.

Activities: 1. After the directions are given, the children (either individually or in small groups) will decide on the theme or make-up of their mobile and gather materials.

2. The children will create their mobile making sure it is balanced and movable.

3. The children will show their mobiles to the class describing all parts of their art work. The mobiles will then be displayed in the classroom.

Category: Art

Contributor: Jeanne E. Sexson

ART AROUND US

Grade Level: Sixth Grade

Purpose: Allow the students through a field hike to see and study shapes and textures in nature

Behavioral Objectives:

Become visually perceptive to designs and textures in nature, e.g. spider webs, sawdust formations, design or pattern of holes in logs, leaf arrangement on trees and ground.

Students will be able to draw behavioral objective described above on paper either realistically or geometrically.

I. Activity---hike

a. Student teacher discussions of what a shape and texture is
b. Discuss "nature shapes"
c. Draw "nature shapes" or list them
d. Gather pencil rubbing textures

II. Activity---return to original meeting place

a. Students examine textures and shapes of others involved with the lesson)possible guessing game)
b. Suggestions for their free time - take shapes and textures a-] form a composition of a subject they would enjoy drawing

Materials Needed:

White paper
Pencils or crayons
Binoculars optional

Category: Art

Contributor: Jeanne E. Sexson

ART IN NATURE AS A FUNCTION

Grade Level: Sixth Grade

Purpose: To help students become aware through oral discussions and actual field work, of the potential tools man can find directly from his environment which will enable him to begin a new civilization. Those tools will be functional as well as aesthetic in value.

Behavioral Objectives:

1. Be able to find a functional use from those natural objects the students consider entities within themselves. e.g. rock and twig become beating tool

2. Use the practice of design to make objects durable

3. Use the practice of design to make objects pleasing to the eye.

4. Relate verbally to each other the possible problems Indians and early homesteaders faced in developing objects e.g. tools crush berries and in turn the berries used as color for decorating tools

I. Activity---short hike (time factor variable in accordance to group needs)

a. Acclimate students to potential tools by teacher student question and answer interplay e.g. Behavioral Objective # 1 or rock shapes lend themselves as what possible tools

b. Students take lead in discussion as to what instrument or tool they would be interested in

c. While collecting objects, discuss Behavioral Objective #4

II. Activity---gather back at original meeting place

a. Discuss and participate in Behavioral Objective # 2-3

b. Behavioral Objective #5-(may wish to return to woods to search for color producing materials e.g. flowers, roots, leaves, etc.

Suggested teacher helper list:

Sharp stone, stick, vine = Pounding or grinding tool
Flat rocks, stick, vine= mat beater
Clay, pit as kiln = pottery
Flat vines = mats Berries, vines = beads
Sticks and vines = fan Triangular rocks & vines = scraping stones

Category: Art

Contributor: Steve Tweddell

ART AND SOCIAL STUDIES

Grade Level: Junior High

Objectives: To develop in the student creativity by utilizing tools from the environment. This is also a good way to acquaint students with the processes early man might have used for painting.

Materials: Paper, pint of vegetable oil.

Procedure: Have students paint a simple picture using only materials provided and those they find in the environment. Discuss with the students how early man might have used the same procedures in his art work.

Activities: Have the students select materials from the environment from which colors can be made. Charcoal, different colors of clay or soil, crushed limestone, or berries can all be used in mixing paints. Brushes can be made from different sized sticks. Have each student mix a small amount of vegetable oil with each color base they find. They may then paint a picture or whatever they wish. A good question to lead to the discussion of early man might be: What materials that you have used to paint your picture might early man also have used?

Category: Art

Contributor: Alma Oberst

COLOR IN NATURE

Grade Level: Primary

Concept: There is color in nature even in what seem to be colorless things.

Purpose: To develop an awareness of color in nature.

Introducing the Concept:

We miss seeing color because we don't look for it. Even shadows have color. Think of the color of earth, rocks, ground cover, grass, moss, what are the primary colors? Do you see anything in nature that is a primary color? Do you see any of the primary colors in nature?

Extending the Concept:

Take third grade children on a field trip to a meadow. Give each of them a 4x6 cardboard window, 3 pieces of heavy art paper and a box of pastel crayons. Have them place the window on the ground in a place where there is no vegetation - move it about until each finds a spot. Have them examine the square intently instead of being all brown it will have minute pieces of color. Using the crayons, transfer the color to a piece of the 8x10 art paper. Then have each child place the frame on ground cover - pick out whatever colors are present and transfer them to the 8x10 art paper. Finally hold the frame up to the sky and reproduce on a piece of the 8x10 whatever color is found in the sky. The patterns of color will vary wildly as will the tone. Some will be bright, others restrained.

Fixing the Concept:

Now have each of the children put his 8x10's on a big tack board about 6 feet long with the earth tones at the bottom, the ground cover in the middle and the sky tones at the top.
The design will be an abstraction but it will have the color and the emotional content of each of the areas.

Instructional materials:

Box of pastels for each child
4x6 cardboard windows for each child
Three pieces of heavy art paper for each child

Category: Recreation

Contributor: Linda Floyd

OUTDOOR GAMES PROVIDE A PLEASANT LEARNING EXPERIENCE

Grade Level: Grade 6

Objectives: To provide children with practice in deductive thinking

To make children aware of objects in nature

To allow children to practice the spelling of terms found in nature

Materials: Pencils for each child
Paper for each child
Safety pins

Procedure:

Play "Who Am I?". Have each child write on a slip of paper the name of an animal, tree, or another living thing. Pin the slip on the back of another player. As soon as each player has a slip, each child tries to discover his own identity by asking the other players questions that can be answered "yes" or "no". When a player has discovered who he is, his slip is removed from his back and pinned on the front of him.

Play "The ABC's of Nature." Go outside and find an object of nature for each letter of the alphabet. The one having the most complete list is the winner.

Play "Trees". Players sit in a circle and are divided into three teams. The game starts when the leader spells "trees" and points to an individual in the circle. The player must spell a tree that begins with "S". The next player to the left and each succeeding player has to spell a tree with the last letter of the preceeding word. Each time a player can use his letter for the spelling of a tree, his team gets two points. A misspelled word counts no points.

Category: Recreation

Contributor: Charles E. Loeffler

APPRECIATION OF RECREATIONAL AND SCENIC RESOURCES

Grade Level: High School

Concept: Our scenic and recreational resources are an increasingly important part of our contemporary way of life. If these facilities are to endure the youth of today must be encouraged to use and appreciate.

Procedure: A unit on the use and appreciation of recreational and scenic resources should be stressed in class. The unit should emphasize the aesthetic and recreational values. The students should be made aware of the major forces at work destroying or altering these resources so as not to depreciate such resources. The following forces are among those most commonly found to alter our facilities in a destructive way:

1. Overuse
2. Vandalism
3. Carelessness - litter bugging
4. Fire
5. Erosion
6. Encroachment and commercialism
7. Destruction or removal of natural materials

Field Trip: Take a field trip to a State Park. Divide students into groups and tour park, looking for some of the major destructive forces. Have students return to designated area at appointed time to report on findings. Continue to use facilities for remainder of day. Conclude with a picnic and discussion of manners necessary to maintain facility for generations to come. By developing good skills, habits and appreciation the following outdoor manners will become a way of life with each student.

(1). Build fires in proper places; put them completely out.

(2). Place all trash and litter in receptacles.

(3). Molest or destroy nothing.

(4). Leave area better than when you found it.

(5). Observe all rules and regulations of each area which are made for one's safety and pleasure.

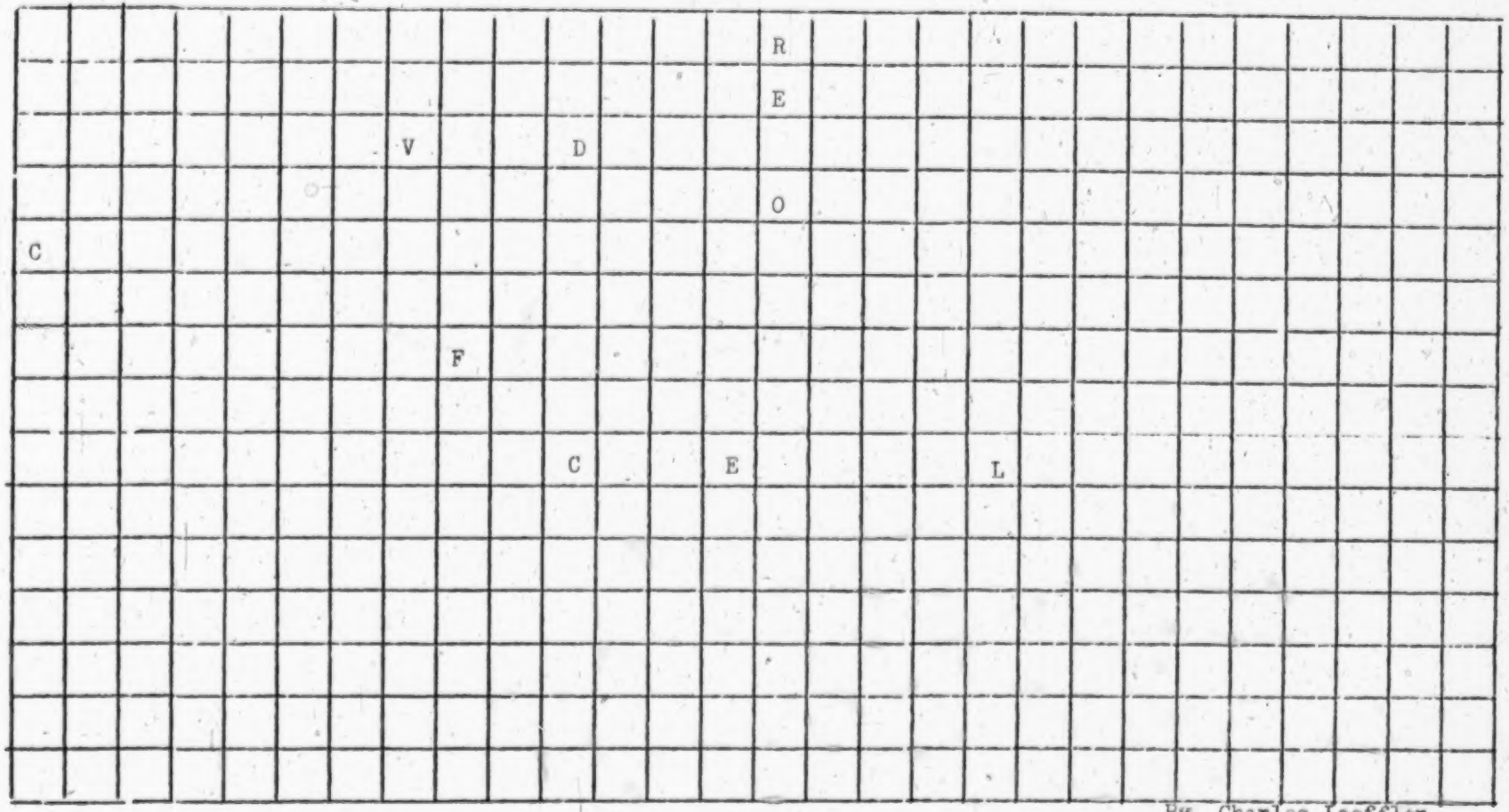
ACROSS

V Willful destruction
O Exhaust by excessive wear
C Indifference
F Major cause of timber loss
E To infringe or invade upon natural resources
C Practice characteristic of business

DOWN

D A cause of ruin or damage
R To take away
E Slow wearing away process
L Debris

Using the letters placed in the various squares below form and complete words, either down or across as indicated from the above descriptions.



By Charles Loeffler

Category: Health

Contributor: Jack D. Jacobs

FOOD AND NUTRITION

Grade Level: Junior High

Concept: A good nutritional diet is essential to everyone who engages in a vigorous outdoor activity or any other strainous activities.

Outdoor Activity:

1. When you go out on long hikes it would be advisable to take small but high calorie foods such as; raisins, chocolate bars, carrots and apples.

2. When in the out-of-doors everyone should learn to use the facilities of nature in preparing their meals.

Related Activities:

1. Plan a balanced menu for the cook out, so that you won't be eating the same food everyday or the same proteins or calories in each meal.

2. There should be plenty of canteens or containers to carry water in. Be sure your supply of water is large enough to surpass until more can be obtained.

3, Encourage wise selection of snacks when visiting the camp stores so you will have something to carry you over until meal time.

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